UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,033	07/13/2006	Gerhard Walter	10191/4467	1779

26646 7590 02/19/2008

KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
DOUGHERTY, THOMAS M	
ART UNIT	PAPER NUMBER
2834	

MAIL DATE	DELIVERY MODE
02/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,033	WALTER ET AL.	
	Examiner	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *706*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 11, 12, 14-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sugg (US 2007/0046148). Sugg shows (fig. 1) a piezoelectric actuator (1), comprising: piezoelectric ceramic layers (2) stacked to form a multilayer stack; an electrode layer (3, 4) provided between each of the piezoelectric ceramic layers (2); and an outer cover layer (B, C) provided on each end face of the actuator (1); wherein the piezoelectric ceramic layers (2) and the outer cover layers (B, C) each have a predetermined dielectric constant, the outer cover layers (B, C)having a lower relative dielectric constant (see ABSTRACT) than the piezoelectric ceramic layers (2) between

the outer cover layers (B, C).

The outer cover layers (B, C) are joined to the actuator (1).

The outer cover layers (B,C) are each adjacent to an electrode layer (3-6).

The outer cover layers (B, C) are each provided on a ceramic layer (2).

The outer cover layers (B, C) are manufactured from a piezoelectric ceramic (PZT, see paragraph [0018]).

A relative dielectric constant of ceramic of the outer cover layer is decreased by admixture of additives (see again paragraph [0018]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugg (US 2007/0046148) in view of Zumstrull et al. (US 6,274,967). Given the invention of Sugg as noted above, in addition, the outer cover layers are designed to be rigid and inelastic. Note that as Sugg notes a piezoelectric ceramic material with a low dielectric constant comprised of a similar material as his piezoelectric ceramic layers which are generally rigid and inelastic.

He doesn't show the outer cover layers joined to a cover of a cylinder surrounding the actuator. It's not clear how the outer cover layers are each joined to a ceramic layer.

Zumstrull et al. show (fig. 1) a piezoelectric actuator (S), comprising: piezoelectric ceramic layers (3) stacked to form a multilayer stack; an electrode layer (understood) provided between each of the piezoelectric ceramic layers; and an outer cover layer (top and bottom piezoelectric components in the stack) provided on each end face of the actuator.

The outer cover layers are each joined to a cover (1, 2) of a cylinder (4) surrounding the actuator (S).

Zumstrull et al. do not note dielectric constant values of components. It's not clear how the outer cover layers are each joined to a ceramic layer.

It would have been obvious to join the outer cover layers of the device of Sugg to a cover of a cylinder, such as is shown by Zumstrull et al. since this provides physical protection of the actuator and provide for improved damping characteristics of the actuator as Zumstrull et al. note at col. 1, lines 30-33.

How the components are connected, e.g. by coating, gluing or soldering, does not carry patentable weight. It is clear that outer cover layers shown by Sugg are adhered to the stack. The substitution of any of the processes of coating or gluing or soldering for the other is not ordinarily inventive. The general characteristics, advantageous and disadvantageous of the these process are well known so that the choice of any one of them, or another for that matter, as a substitute for any one of the others to obtain the known or naturally expected advantages of the chosen process presents in general a case of good judgment instead of a case of invention. Only where the substitution has been attended by results which are different from those ordinarily attending such a

substitution and from those which would naturally be expected to attend the same can the substitution be regarded as patentable. Additionally, the method of forming a device is not germane to the issue of patentability of the device itself. *In re Brown* 173 USPQ 685, *In re Fessman* 180 USPQ 324.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugg (US 2007/0046148) and Zumstrull et al. (US 6,274,967) further in view of Ella et al. (US 6,670,866). Given the combined invention of Sugg and Zumstrull et al. as noted above, they don't note that the outer covers layers are each manufactured from one of quartz, a glass, an adhesive, a lacquer, a solder or silicon dioxide ceramic.

Ella et al. note a layer with a dielectric constant that is relatively low (see col. 10, lines 29-39) in their piezoelectric stack arrangement. they further note at the above cited location, that the lower dielectric constant layer are each manufactured from one of quartz, a glass, an adhesive, a lacquer, a solder or silicon dioxide ceramic.

They do not show both top and bottom low dielectric constant layers, between which is a piezoelectric stack.

It would have been obvious to one having ordinary skill in the art to employ the silicon dioxide material of Ella et al. for the low dielectric constant outer cover layers in the combined device of Sugg and Zumstrull et al. at the time of either invention since it is an advantageous material that "is known to have a compensating effect when using the right thickness". See col. 10, lines 33-35.

Additionally it would have been obvious to one having ordinary skill in the art at the time of the Sugg or Zumstrull et al. inventions, to use any of the materials quartz, a

glass, an adhesive, a lacquer, a solder or silicon dioxide ceramic for the outer cover layers, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art reads on aspects of the claimed invention.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

tmd

tmd

October 10, 2007

TOM DOUGHERTY
PRIMARY EXAMINER